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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/612,802

07/02/2003

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EXAMINER

ROSE, HELENE ROBERTA

ART UNIT

PAPER NUMBER

2163

DATE MAILED: 12/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/612,802	Applicant(s) LAKE, JOHN M.	
	Examiner Helene R. Rose	Art Unit 2163	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

1. Claims 1-26 is pending; No claims have been amended nor added, nor cancelled.
2. Applicant's remarks, filed on 9/19/2006, with respect to claims 1-26 have been considered and Claims 1-26 are moot in view of the new ground(s) of rejection.

Claim Rejections – 35 U.S.C 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-26 are rejected under 35 U.S.C. 103(a) as being obvious over Sayag (US Patent No, 6,898,602/Filing Date of Patent: December 10, 2002) in view of Kundu et al (US Publication No. 20040210577/Filing Date of Publication: April 16, 2003) and further in view of Kolawa et al (US Patent No. 5,842,019, Date of Patent: November 24, 1998)

Claims 1,10,15,and 24-26:

Regarding claims 1,10,15, and 24-26, although claims 1 and 24 teach a method, claims 15 and 26 teach a computer program product and claims 10 and 25 teach an information handling system. Thus, the following claims 1,10,15, and 24-26 implements the same limitations to carry out the invention.

Sayag teaches a method/computer program product/system for automatically nullifying (column 2, lines 23-29) variables in a middleware computer program (see Figure 1, all features, Sayag), said method/computer program product/system comprising:

one or more processors (column 4, lines 53-57 and column 2, lines 64-65, wherein a data processing system is known as a system that includes computer systems and associated personnel, that performs input, processing storage, output, and control functions to accomplish a sequence of operations on data, Sayag);

a memory accessible by the processors (columns 4-5, lines 65-67 and lines 1-5, Sayag);

a middleware software application that runs on the operating system (column 5, lines 8-10, wherein a middleware software application is known as a communication layer that allows applications to interact across hardware and network environments, Sayag), the middleware application including a garbage collected heap (column 2, lines 29-30, wherein the garbage collector is invoked at each instruction, Sayag); and

a nullification tool for nullifying program references (column 2, lines 64-67, Sayag¹), the nullification tool comprising steps effective to:

reading one or more variables included in one or more activation records included in the computer program (column 5, lines 17-38, wherein reading variable excessive_gc is made and reading variable trace_usage is made, and if variable is set then a display if memory usage is activated and column 6, lines 1-5, wherein one activation record mallocHeapObject is disclosed and a program statement is read from working memory and evaluated, Sayag);

Sayag discloses all the limitations above. However, Sayag does not disclose wherein identifying a program statement where the variable is last used nor does he disclose inserting a nullification statement after the identified program,

¹ The Examiner interprets the term “nullification tool” to be an act of nullifying; making null and void; counteracting or overriding the effect or force of something. Therefore the tool utilized within Sayag invention that carries out the same function of a nullification tool is identified within (columns 6-7, lines 66-67 and lines 1-17 and column 8, line 63, Sayag).

On the other hand, Kundu discloses identifying a program statement in the program where the variable is last used (paragraph [0051], wherein the remaining field contain information about the current state of the session, wherein locations in physical redo logs are identified by system change numbers, or SCN's. start_scn and end_scn are the SCN's of the physical redo blocks at which the logical redo log made for the session will begin and end and checkpoint_scn is the SCN of the most recently-made checkpoint in the logical redo log, which is equivalent to identifying a program statement in the program where the variable is last used, and wherein a checkpoint is interpreted to be an identified snapshot of a database or a point at which the transactions against the database have been frozen, Kundu); and inserting a nullification statement after the identified program (paragraph [0066], wherein wherein the builder also makes checkpoints in logical redo log by inserting checkpoint logical change records, i.e. LCR at the proper locations in logical redo log, and wherein a redo log is interpreted to be a set of files that record all changes made to an database and a checkpoint is interpreted to be an identified snapshot of a database or a point at which the transactions against the database have been frozen, which is equivalent to nullifying the identified last used variable, Kundu).

It would have been obvious to one of the ordinary skill in the art at the time of the invention was made to incorporate Kundu teaching into Sayag system to recognize when a variable was last used within a program. A skilled artisan would have been motivated to do so for allocating more space within memory to store data as well as maintaining memory management in a system.

Sayag in view of Kundu discloses the limitation above. However, Sayag in view of Kundu does not disclose the step of, wherein, the nullification statement adapted to nullify the identified last-used variable.

On the other hand, Kolawa disclose the nullification statement adapted to nullify the identified last-used variable (column 5, lines 40-61, wherein track using allocated memory space using reference counting, if value is stored in a pointer and so forth, and wherein if the reference count for the pointer variable becomes zero, wherein zero is equivalent to nullify, Kolawa);

It would have been obvious to one of the ordinary skill in the art at the time of the invention was made to incorporate Sayag in view of Kundu teachings into Kolawa system. A skilled artisan would have been motivated to combine as suggested by Kolawa at {column 1, lines 60-62 and column 2, lines 6-9, Kolawa}, for providing a code to identify and track memory space. As a result, for detecting leak memory space in a computer program.

writing a plurality of program statements (column 6, lines 29-32, wherein a determination is made whether the program statements remain to be written, if the decision step is positive, Sayag), including the identified program statement, to a resulting code file (column 6, lines 20-23, Sayag); and writing the nullification statement to the resulting code file (column 6, lines 20-23, Sayag) in a position subsequent to the identified program statement (column 3, lines 11-14, wherein after running the garbage collector, and determining the amount of the memory that is still in use of the heap, Sayag).

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Claims 2,11, and 16:

Regarding claims 2,11, and 16, the combination of Sayag in view of Kundu and further in view of Kolawa teaches wherein the means for reading, means for identifying (column 3, lines 15-19, Sayag), and means for inserting are each performed by a compiler (column 5, lines 47-52, wherein a compiler is any program that transfer one set of symbols into another by a set of semantic rules, Sayag).

Claims 3,12,and 17:

Regarding claims 3,12, and 17, the combination of Sayag in view of Kundu and further in view of Kolawa teaches the computer program product further comprising:

means for writing the activation records, program statement (column 6, lines 29-32, wherein a determination is made whether the program statements remain to be written, if the decision step is positive, Sayag), and nullification statement to a resulting code file (column 6, lines 20-23, Sayag).

Claims 4,13, and 18:

Regarding claims 4,13, and 18, , the combination of Sayag in view of Kundu and further in view of Kolawa teaches wherein at least one of the variables reference an object stored in a garbage collected memory heap (column 3, lines 1-14, Sayag).

Claims 5 and 19:

Regarding claims 5 and 19, the combination of Sayag in view of Kundu and further in view of Kolawa teaches wherein the activation records include one or more local variable definitions (column 6, lines 6-9, Sayag).

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Claims 6 and 20:

Regarding claims 6 and 20, the combination of Sayag in view of Kundu and further in view of Kolawa teaches wherein the activation records include one or more argument parameters (column 5, lines 21-22, wherein parameter is defined, Sayag).

Claims 7,14, and 21:

Regarding claims 7,14, and 21, the combination of Sayag in view of Kundu and further in view of Kolawa teaches wherein the objects are stored in a garbage collected heap stored in a computer memory (column 3, lines 1-14), the method further comprising:

means for executing a garbage collection program (column 2, lines 29-30, wherein the garbage collector is invoked at each instruction, Sayag);

means for identifying (column 3, lines 7-8, Sayag), by the garbage collection program (column 2, lines 29-30, Sayag), one of the objects that was previously referenced by one of the variables included in the nullification statement (column 2, lines 42-44, Sayag); and

means for reclaiming the memory occupied by the identified object (column 2, lines 44-48, Sayag).

Claims 8 and 22:

Regarding claims 8 and 22, the combination of Sayag in view of Kundu and further in view of Kolawa teaches the computer program product further comprising:

means for executing a compiler to perform the reading (column 3, lines 6-8, wherein executing code of the application and column 5, lines 47-52, wherein a compiler is any program that transfer one set of symbols into another by a set of semantic rules, Sayag);

identifying (column 3, lines 7-8, Sayag) and inserting (column 5, lines 48-52, wherein the application may be installed in a memory as software and column 7, lines 37-38, wherein installed in a development program, Sayag);

means for writing a plurality of program statements including the program statement (column 6, lines 29-32, wherein a determination is made whether the program statements remain to be written, if the decision step is positive, Sayag) to a resulting code file (column 6, lines 20-23, Sayag);

means for writing the nullification statement to the resulting code file (column 6, lines 20-23, Sayag) in a position subsequent to the identified program statement (column 3, lines 11-14, wherein after running the garbage collector, and determining the amount of the memory that is still in use of the heap, Sayag).

Claims 9 and 23:

Regarding claims 9 and 23, the combination of Sayag in view of Kundu and further in view of Kolawa teaches the computer program product further comprising:

means for identifying one or more statements from the plurality of statements (column 3, lines 15-19, Sayag) where one or more other objects are last used (column 7, line 48, wherein last instruction of the application is identified, Sayag); and

means for writing nullification statements (column 6, lines 29-32, Sayag) for each of the other objects following the identified statement corresponding to the object's last use to the resulting code file (column 3, lines 11-19, Sayag).

Prior Art of Record

1. Sayag (US Patent No. 6,898,602)
2. Kundu et al. (US Publication No. 2004/0210577)
3. Kolawa et al (US Patent No. 5,842,019)

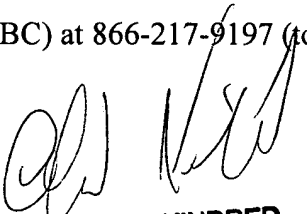
Point of Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helene R. Rose whose telephone number is (571) 272-0749. The examiner can normally be reached on 8:00am - 4:30pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Technology Center 2100
November 27, 2006


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